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09/902,760	07/12/2001	Hirochika Matsuoka	35.C15565	9589

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EXAMINER

THOMPSON, JAMES A

ART UNIT PAPER NUMBER

2624

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/902,760

Applicant(s)

MATSUOKA, HIROCHIKA

Examiner

James A Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-2 recite an image processing method, but fails to recite any positive steps. Claims 1-2 recite the results of the method, but not the actual positive steps that are required to obtain the results. Therefore, claims 1-2 are indefinite since the subject matter which the applicant regards as the invention has not been particularly pointed out and distinctly claimed.

Claims 3-9 depend from claim 1 either directly or indirectly, and are therefore also rejected under 35 USC 112, second paragraph.

4. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 10 recites an image processing apparatus, but fails to recite any physical means or physical components of said apparatus. Claim 10 recites the results of the operation of the apparatus, but not the actual physical means or physical components of said apparatus that are required to perform the functions of the apparatus, and thus obtain the results. Therefore, claim 10 is indefinite since the subject matter which the applicant regards as the invention has not been particularly pointed out and distinctly claimed.

5. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites a computer-readable storage medium which stores a program containing an image processing method, but fails to recite any positive steps of said method. Claim 11 recites the results of the method, but not the actual positive steps that are required to obtain the results. Therefore, claim 11 is indefinite since the subject matter which the applicant regards as the invention has not been particularly pointed out and distinctly claimed.

#### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1-4 and 6-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ng (US Patent 5,185,661).

**Regarding claims 1, 10 and 11:** Ng discloses an image processing apparatus (figure 3 of Ng) by which a color signal located within a first color reproduction gamut ( $L^*a^*b^*$  of scanner) represented by a first color system (column 4, lines 9-13 of Ng) is subjected to mapping conversion into a color signal located within a second color reproduction gamut ( $L^*a^*b^*$  of printer) represented by the first color system (figure 6 and column 6, lines 17-23 of Ng), wherein a locus of a change of color in the first color reproduction gamut is represented by a curve (figure 7b(58) and figure 7c of Ng), mapping is performed to the curve (column 7, lines 24-27 and column 8, lines 37-42 of Ng), and the mapping conversion is performed on the basis of relation of the curves before and after the mapping (column 8, lines 43-50 of Ng). The relationship between input (scanner) and output (printer) lightness values ( $L^*$ ) are mapped (figure 7b(58) and column 7, lines 24-27 of Ng), as are the saturation values ( $C^*$ ) which are based on the values for  $a^*$  and  $b^*$  (figure 7c and column 8, lines 37-42 of Ng). There is an individual curve for  $C^*$  for each incremental hue angle ( $\Delta H$ ) (column 8, lines 37-40 of Ng), thus forming a multi-dimensional curve for the overall color space mapping.

Further regarding claims 1 and 11: The apparatus of claim 10 performs the method of claim 1 and the software program method of claim 11.

**Regarding claim 2:** Ng discloses that the mapping is performed such that a change rate of the curve is maintained (figure 7b and column 7, lines 27-36 of Ng). The change rate (slope) of the curve is maintained throughout the curve, except

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at the high and low ends (figure 7b and column 7, lines 27-36 of Ng). However, the deviation at the high and low ends relate to the problems of specular reflection and the maximum output density that can be printed by a printer, respectively. The deviation is due to physical characteristics inherent in the halftone printing process and not to the color space mapping itself. Therefore, the *mapping* itself is performed such that a change rate of the curve is maintained.

**Regarding claim 3:** Ng discloses that the locus of the change of color in the first color reproduction gamut is obtained on the basis of surface sample points in the first color reproduction gamut (figure 8 and column 8, lines 17-24 of Ng). The surface sample points (figure 8(23) of Ng) are the basis for how the color is changed in the first color reproduction gamut (column 8, lines 17-24 of Ng).

**Regarding claim 4:** Ng discloses that a first gradation line being the curve representing the locus of the change of color in the first color reproduction gamut (figure 6(15) of Ng) and a second gradation line in the second color reproduction gamut (figure 6(17) of Ng) are obtained (figure 6 and column 6, lines 9-16 of Ng), and the mapping conversion of the color signal in the first color reproduction gamut into the color signal in the second color reproduction gamut is performed on the basis of the second gradation line corresponding to the first gradation line relative to the color signal in the first color reproduction gamut (column 6, lines 17-24 of Ng).

**Regarding claim 6:** Ng discloses that plural first color signals belonging to the first color reproduction gamut are set (column 4, lines 1-6 of Ng), the curve is obtained on the basis of the set plural first color signals (figure 7b; figure 7c; and

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column 8, lines 61-64 of Ng), and in a subset of the color signals being not an empty set, the color signals being the components of the subset are constrained such that they belong to any of six hue faces of a red face, a green face, a blue face (column 4, lines 11-13 of Ng), a cyan face, a magenta face, and a yellow face (column 8, lines 64-68 of Ng).

**Regarding claim 7:** Ng discloses that, in the mapping conversion, hue adjustment to adjust two-dimensional mapping (column 8, lines 17-24 of Ng) and a hue component on a lightness-chroma plane according to the second color reproduction gamut (column 8, lines 4-13 of Ng) is performed to the color signal in the first color reproduction gamut (figure 7c and column 8, lines 37-42 of Ng).

**Regarding claim 8:** Ng discloses that, in the mapping conversion, the color signal is extracted from the second gradation line in accordance with a ratio of hue angle of the color signal of the first gradation line (column 8, lines 4-9 and lines 37-42 of Ng).

**Regarding claim 9:** Ng discloses that, in the mapping conversion, the color signal is extracted from the second gradation line in accordance with a ratio of the length of the first gradation line and the length from the edge point of the first gradation line to the color signal being the target of the mapping conversion result calculation (figure 7b; figure 7c; column 7, lines 30-33; and column 8, lines 37-42 of Ng). The input and output values of the luminance (figure 7b of Ng) and hue (figure 7c of Ng) are mapped based on a linear function with a constant slope in the primary region of the curves (column 7, lines 30-33 and column 8, lines 37-42 of Ng). Therefore, the luminance value for the output device is based on the relative

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portion of the length along the luminance curve (figure 7b of Ng) that the luminance value for the input device is located, and the hue value for the output device is based on the relative portion of the length along the hue curve (figure 7c of Ng) that the hue value for the input device is located. The relative portion along the luminance curve would be a ratio of the length of the first gradation line and the length from the edge point of the first gradation line to the luminance signal being the luminance component of target of the mapping conversion result calculation, and likewise with the hue curve. Therefore, since the luminance and hue for the output device are calculated based on the relative portion of both the luminance and hue values along the luminance and hue curves, respectively, the color signal is extracted from the second gradation line in accordance with a ratio of the length of the first gradation line and the length from the edge point of the first gradation line to the color signal being the target of the mapping conversion result calculation.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



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9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ng (US Patent 5,185,661) in view of Tuijn (US Patent 6,058,207).

**Regarding claim 5:** Ng does not disclose expressly that the curve is obtained by using at least one of a B-spline curve, a rational B-spline curve, a Bezier curve, and a one- or more-dimensional spline curve.

Tuijn discloses performing color modification in a color gamut (column 6, lines 58-67 of Tuijn) by obtaining a curve using at least one of a B-spline curve, a rational B-spline curve, a Bezier curve, and a one- or more-dimensional spline curve (column 12, lines 42-49 and column 13, lines 7-10 of Tuijn).

Ng and Tuijn are combinable because they are from the same field of endeavor, namely color gamut correction and modification for digital color processing systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a spline function or a Bezier function, as taught by Tuijn, to obtain the curve taught by Ng. The motivation for doing so would have been that appropriate weight values are required to better transform color space values (column 5, lines 32-38 of Tuijn), such as in the case of the spline (column 12, line 47-52 of Tuijn) and Bezier curves (column 13, lines 7-10 of Tuijn). Therefore, it would have been obvious to combine Tuijn with Ng to obtain the invention as specified in claim 5.

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**Conclusion**

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Newman et al., US Patent 5,208,911, 4 May 1993. Newman contains many of the same teachings as Ng and could be relied upon to reject many of the claims.

Ito et al., US Patent 6,437,792 B1, 20 August 2002. Ito teaches much of what is in Applicant's specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson  
Examiner  
Art Unit 2624

JAT  
17 February 2005



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PRIMARY EXAMINER